



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/282,851	03/31/1999	CHANG-SOO PARK	678-522(P872)	9197

7590

05/08/2002

PAUL J FARRELL
DILWORTH & BARRESE
333 EARLE OVINGTON BOULEVARD
UNIONDALE, NY 11553

EXAMINER

LAMARRE, GUY J

ART UNIT

PAPER NUMBER

2133

DATE MAILED: 05/08/2002

5

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/282,851

Applicant(s)

PARK ET AL.

Examiner

Guy J. Lamarre, P.E.

Art Unit

2133

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 March 1999.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-47 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-47 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 1999 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Art Unit: 2133

DETAILED ACTION

Reassignment Affecting Application Location

0. The Art Unit location of your application in the USPTO has changed. To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to Art Unit 2133.

0.1 Claims 1-47 are presented for examination.

Drawings

1. The Drawings are objected to because Figures 1-2, referred to as conventional in the specification, have not been labeled as prior art. Appropriate correction to drawings as required by form PTO 948 shall be made in response to current Office action as per 37 CFR 1.85(a).

Claim Objections

2. The listed claims are objected to as follows: Claim 3 line 2 recites "suer" instead of super. Claim 30 does not end in a period.

Appropriate correction is required.

Information Disclosure Statement

3. Examiner has not considered the third and fourth references listed on the Information Disclosure Statement (paper # 3) because no English translation has been submitted. USPTO Form 1449 for Information Disclosure Statement (paper # 4) is not seen. Examiner hereby requests that said form accompany response to instant Office action.

Claim Rejections - 35 USC ' 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4.0 This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

4.1 **Claims 1-4, 6-18, 20-47** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Applicants' Admitted prior art** (hereinafter **Admitted prior art**) in view of **Meidan et al.** (US Patent No. 5,936,972; June 18, 1997).

As per **Claims 1, 12-16, 20, 23, 29-31, 37-43, 45-47, Admitted prior art** substantially discloses the procedure for the claimed mobile communication system comprising: means to send data or a central processing unit (CPU) for determining a number of consecutive input frames required to construct a super frame, according to a QoS parameter; and a turbo encoder (page 1 last para.) for turbo encoding the data comprising said super frame determined by the number of consecutive input frames. {See **Admitted prior art**, Figures 1-2, page 1 last para. - page 4 para. 2, in passim, wherein apparatus and method are described.} **Not specifically described** in detail in **Admitted prior art** is the step whereby means is provided for determining a number of consecutive input frames required to construct a super frame based on a QoS parameter or transfer media characteristics. **However** such approach is well known. For example, **Meidan et al.**, in an analogous art, discloses an interleaving algorithm wherein such techniques are described. {See **Meidan et al.**, Id., Fig. 2, ABSTRACT and col. 2 lines 7 et seq..} **Therefore**, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the procedure of the **Admitted prior art** by including therein width adjusting means based on the kind of information to be sent, as taught by **Meidan et al.**, because such modification would provide the procedure disclosed in the **Admitted prior art** with a technique whereby "*the message structure determiner 160 uses syndrome vectors to*

Art Unit: 2133

estimate the BER of symbol-by-symbol detected data to ascertain the received signal quality and determine the most likely transmitted message structure. In this embodiment, the transmitted message structure can be varied in length, type of interleaving, source data rate, convolutional code used, and any combination of the above. This embodiment may also be modified to allow only certain properties to be varied or only allow certain combinations of the above properties to be varied.” {See Meidan et al., col. 5 line 15 et seq.}

As per Claims 2, 22, Admitted prior art discloses the procedure for the claimed mobile communication system as claimed in claim 1, wherein the turbo encoder comprises: a first constituent encoder for encoding data size of the super frame; an interleaver for interleaving the data size of the super frame; and a second constituent encoder, operably connected to said interleaver, for encoding the interleaved data size of the super frame {See **Admitted prior art**, Figures 1-2, page 1 last para. - page 4 para. 2, in passim, wherein apparatus and method are described, such as interleaver, constituent encoder.}

As per Claim 3, Meidan et al. discloses the procedure for the claimed mobile communication system as claimed in claim 2, wherein said interleaver includes an interleaving address mapper for interleaving said super frame. {See **Meidan et al.**, col. 5 line 15 et seq., e.g., “*the transmitted message structure can be varied in length, type of interleaving.*” including data addressing and mapping means}

As per Claim 4, Meidan et al. discloses the procedure for the claimed mobile communication system as claimed in claim 2, further comprising: a multiplexer for multiplexing respective outputs of the first and second constituent encoders; and a channel interleaver for interleaving an output of the multiplexer. {See **Meidan et al.**, col. 2 lines 40-42, for multiplexing or selecting means.}

As per Claim 6, Meidan et al. discloses the procedure for the claimed mobile communication system as claimed in claim 1, wherein the QoS parameter includes information to define the data size of a frame. {See Meidan et al., col. 5 line 15 et seq., e.g., “the transmitted message structure can be varied in length, type of interleaving.”}

As per Claims 7, 24, Meidan et al. discloses the procedure for the claimed mobile communication system as claimed in claim 6, wherein the QoS parameter includes a data rate and the number of the input frames to be combined into the super frame is determined by said data size rate and an input frame length. {See Meidan et al., col. 5 line 15 et seq., e.g., “the transmitted message structure can be varied in length, type of interleaving.”}

As per Claim 8, Meidan et al. discloses the procedure for the claimed mobile communication system as claimed in claim 7, wherein the input frame data is less than 320 bits. {See Meidan et al., col. 5 line 15 et seq., e.g., “the transmitted message structure can be varied in length.”}

As per Claims 9, 18, 26, 28, 32, 35, Meidan et al. discloses the procedure for the claimed mobile communication system as claimed in claim 1, wherein the QoS parameter includes at least a permissible delay, and the number of the input frames to be combined in the super frame is determined by the permissible delay. {See Meidan et al., Fig. 1 Block 175 depicting delay means, e.g., “A delay 175 is used to synchronize the arrival of the additional information, such as the convolutional code $C_{sub,i}$, the syndrome vector $s_{sub,i}$, and the syndrome patterns p , from the message structure determiner 160. At the output of the soft-decision decoder 170, a digital-to-analog (D/A) converter 180 converts the maximum likelihood soft-decision decoded signal to the analog domain, and an audio amplifier 185 uses operational amplifiers to increase the gain of the recovered signal for reproduction through audio speaker 190” at col. 5 line 3.}

As per Claims 10, 19, 23, 27, 36, Meidan et al. discloses the procedure for the claimed mobile communication system as claimed in claim 1, wherein the QoS parameter at least includes a permissible error rate, and the number of input frames to be assembled into the super frame is determined based on the permissible error rate. {See Meidan et al., Fig. 1 Block 175 depicting delay means, e.g., *"the transmitted message structure can be varied in length, type of interleaving, source data rate, convolutional code used, and any combination of the above. This embodiment may also be modified to allow only certain properties to be varied or only allow certain combinations of the above properties to be varied"* at col. 5 line 15 et seq.}

As per Claims 11, 15, 17, 21, 25, 31, 33-34, 39, 44, Meidan et al. discloses the procedure for the claimed mobile communication system as claimed in claim 1, wherein the QoS parameter is a receiver memory size, and the number of the input frames to be assembled into the super frame is determined based on the receiver memory size. {See Meidan et al., Fig. 1 Block 175 depicting delay means, e.g., *"the transmitted message structure can be varied in length, type of interleaving, source data rate, convolutional code used, and any combination of the above. This embodiment may also be modified to allow only certain properties to be varied or only allow certain combinations of the above properties to be varied"* at col. 5 line 15 et seq.}

4.1.1 Claims 5, 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Applicants' Admitted prior art** (hereinafter **Admitted prior art**) in view of **Meidan et al.** (US Patent No. 5,936,972; June 18, 1997) in further view of **Gelblum et al.** (US Patent No. 6,088,387; Dec. 31, 1997).

As per Claims 5, 19, **Admitted prior art** and **Meidan et al.** substantially disclose the procedure for the claimed mobile communication system as claimed in claim 4. {See **Admitted prior art**, Figures 1-2, page 1 last para. - page 4 para. 2, in passim, wherein apparatus and method are described.} **Not specifically described** in detail in **Admitted prior art** or **Meidan et al.** is the step whereby means is provided for the selector or multiplexer to puncture a number of

Art Unit: 2133

bit of said encoded symbols for rate matching. **However** such approach is well known. For example, **Gelblum et al.**, in an analogous art, discloses an algorithm for “*Multi-channel parallel/serial concatenated convolutional codes and trellis coded modulation encoder/decoder*,” wherein such techniques are described. {See **Gelblum et al.**, Id., ABSTRACT.} **Therefore**, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the procedure of the **Admitted prior art** and **Meidan et al.** by including therein puncturing means, as taught by **Gelblum et al.**, because such modification would provide the procedure disclosed in the **Admitted prior art** and **Meidan et al.** with a technique whereby “*To eliminate the processing delay associated with transmitting large turbo blocks, this patent application proposes spreading a single turbo block across multiple channels. So, for example, if there are 512 channels in a multicarrier system and each channel carry 2 bits per symbol, the receiver can receive an entire turbo block plus parity bits in a couple of symbol times. In turbo code, the code rate and the constellation size can be varied selectively based on the channel characteristic. For example, turbo code produces at least two parity bits for each information bit. However, it is rare that the highest throughput is obtained by sending all the parity bits (the lowest code rate). The overhead is too high (that is, the code rate or ratio of information bits to total bits is too low) for the benefit of having so many parity bits. Thus, in using turbo codes, transmitters remove parity bits in a process of puncturing. Given a channel attenuation and noise level, one can find by simulation, the optimum number of parity bits to transmit and the optimum constellation size for the given power constraints. That is, constellation size is traded against signal-to-noise ratio and code rate for a fixed bit error rate and channel characteristic (attenuation and noise and whatever other characteristics may be folded into the channel model used for simulation) to optimize the number of information bits transmitted at the given BER.*” {See **Gelblum et al.**, col. 2 line 24 et seq. }

Art Unit: 2133

4.2 Claims 1, 12-16, 20, 23, 29-31, 37-43, 45-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Applicants' Admitted prior art** (hereinafter **Admitted prior art**) in view of **Migaku** (Japan Patent Document No. 8-237146; Sept. 13, 1996).

As per **Claims 1, 12-16, 20, 23, 29-31, 37-43, 45-47, Admitted prior art** substantially discloses the procedure for the claimed mobile communication system comprising: means to send data or a central processing unit (CPU) for determining a number of consecutive input frames required to construct a super frame, according to a QoS parameter; and a turbo encoder (page 1 last para.) for turbo encoding the data comprising said super frame determined by the number of consecutive input frames. {See **Admitted prior art**, Figures 1-2, page 1 last para. - page 4 para. 2, in passim, wherein apparatus and method are described.} **Not specifically described** in detail in **Admitted prior art** is the step whereby means is provided for determining a number of consecutive input frames required to construct a super frame based on a QoS parameter or transfer media characteristics. **However** such approach is well known. For example, **Migaku**, in an analogous art, discloses an interleaving algorithm wherein such techniques are described. {See **Migaku**, Id., ABSTRACT.} **Therefore**, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the procedure of the **Admitted prior art** by including therein width adjusting means based on the kind of information to be sent, as taught by **Migaku**, because such modification would provide the procedure disclosed in the **Admitted prior art** with a technique whereby "*interleaving processing delay is reduced.*" {See **Migaku**, ABSTRACT.}

4.3 Claims 1, 12-16, 20, 23, 29-31, 37-43, 45-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Applicants' Admitted prior art** (hereinafter **Admitted prior art**) in view of **Shinji** (Japan Patent Document No. 6-35057; Dec. 22, 1994).

As per **Claims 1, 12-16, 20, 23, 29-31, 37-43, 45-47, Admitted prior art** substantially discloses the procedure for the claimed mobile communication system comprising: means to send data or a central processing unit (CPU) for determining a number of consecutive input

Art Unit: 2133

frames required to construct a super frame, according to a QoS parameter; and a turbo encoder (page 1 last para.) for turbo encoding the data comprising said super frame determined by the number of consecutive input frames. {See **Admitted prior art**, Figures 1-2, page 1 last para. - page 4 para. 2, in passim, wherein apparatus and method are described.} **Not specifically described** in detail in **Admitted prior art** is the step whereby means is provided for determining a number of consecutive input frames required to construct a super frame based on a QoS parameter or transfer media characteristics. **However** such approach is well known. For example, **Shinji**, in an analogous art, discloses an interleaving algorithm wherein data string extending or adjusting techniques are described. {See **Shinji**, Id., ABSTRACT.} **Therefore**, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the procedure of the **Admitted prior art** by including therein width adjusting means based on channel error conditions, as taught by **Shinji**, because such modification would provide the procedure disclosed in the **Admitted prior art** with a technique whereby *when the decoder detects code error, the subsequent interleaving interval is selectively adjusted for better data protection*. {See **Shinji**, ABSTRACT: penultimate sentence.}

4.4 Examiner requests that Applicant provide information on any copending applications that may raise **double patenting** issues with instant application.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The references cited in Form PTO-892 are for the Applicant's review and comments.

5.1 Any response to this action should be mailed to:

Commissioner of Patents and Trademarks, Washington, D.C. 20231

or faxed to:

(703) 746-7238, (for After-Final communications),

Art Unit: 2133

(703) 746-7239, (for formal communications intended for entry),


(703) 746-7240 (for informal or draft communications, please label "PROPOSED" or "DRAFT").

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive,
Arlington, VA, Fourth Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Guy J. Lamarre, P.E., whose telephone number is (703) 305-0755. The examiner can normally be reached on Monday to Friday from 9:30 AM to 6:00 PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert De Cady, can be reached on (703) 305-9595.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3900.

Guy J. Lamarre, P.E. 

Patent Examiner

5/4/02


ALBERT DECADY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100
